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08/480,733	06/07/95	ZURAVLEFF	018414-133

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EXAMINER  
PHAN, R

ART UNIT 2305	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
**08/480,738**

Applicant(s)  
**Zuravleff et al.**

Examiner  
**Raymond N. Phan**

Group Art Unit  
**2305**



☒ Responsive to communication(s) filed on May 22, 1997

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 39-80 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 39, 42-48, 51-58, 61-68, and 71-78 is/are rejected.

☒ Claim(s) 40, 41, 49, 50, 59, 60, 69, 70, 79, and 80 is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

### Part III DETAILED ACTION

#### *Notice to Applicant(s)*

1. This action is responsive to the following communications: amendment filed on May 22, 1997.
2. This application has been re-examined. Claims 39-80 are pending.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

4. Claims 39, 61, and 71 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kimura (US No. 5,507,032).

In regards to claims 39, 61, and 71, Kimura discloses a multiprocessor I/O request control system comprising one or more processors PM1, 2, 3 that generate processor request directed to one or more peripheral devices DVC1, DVC2, (see figure 3, col. 4, line 59 through col. 5, line 10), a plurality of peripheral devices that accept the processor requests (see figure 3, col. 4, line 59 through col. 5, line 10), and a controller 2 responsive to the processor request forming a plurality of separate pending queues corresponding to each of the plurality of peripheral devices for queuing the processor requests directed to a particular peripheral device in the table (see figure 3, col. 13, lines 1-30). Furthermore, Kimura teaches the controller

wherein the I/O devices process the processor requests simultaneously (see col. 6, lines 27-32).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

6. Claims 42-44, 45-48, 51-58, 62-68, and 72-78 are rejected under 35 U.S.C. § 103 as being unpatentable over Kimura in view of Bell et al. (US No. 5,546,546).

In regards to claims 42-43, Kimura teaches the claimed subject matter as discussed above rejection except the use of priority of pending queues. However, Bell et al. disclose the priority state machine 421 coupled to the first and second bus for determining whether a transaction in the inbound queue to be executed or a transaction in the outbound queue is to be executed (see figure 4, col. 22, lines 37-52). Therefore, it would have been obvious to a person of an ordinary skill in the

art at the time the invention was made to have combined the teachings of Bell et al. into the teachings of Kimura because it would provide an adequately performing queues in a system.

In regards to claim 44, Kimura disclose the use of processor making a request on I/O bus 4, and wherein the I/O accepts request over the Dvbus 5 (see figure 3, col. 5, lines 2-23). The different bandwidth between two buses are well known to a person skilled in the art.

In regards to claim 45, Bell et al. disclose the controller tagged the request (see col. 8, lines 33-37).

In regards to claim 46, Bell et al. disclose the controller place the processor requests in the return queue (i.e. inbound queue) after the peripheral device respond to the request (see col. 8, lines 38-52).

In regards to claim 47, Bell et al. disclose the shared buffer for pending queues (see col. 9, line 62 through col. 10, line 5).

In regards to claim 48, the use of controller variably adding entries to pending queues from the allocated free pool of entries only after the processor requests are generated is well-known to a person skilled in the art.

Claims 51-59 are the apparatus claims corresponding to the claims 39 and 42-49. Therefore, claims 51-59 are rejected for the same rationale set forth claims 39 and 42-49.

Claims 62-68 are the method claims corresponding to the claims 42-48. Therefore, claim 62-68 are rejected for the same rationale set forth claims 42-48.

Claims 72-78 are the system claims corresponding to the apparatus claims 42-48. Therefore, claim 72-78 are rejected for the same rationale set forth claims 42-48.

***Allowable Subject Matter***

7. Claims 40-41, 49-50, 59-60, 69-70, and 79-80 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

8. Claims 39 and 42-48, 51-58, 61-68, and 71-78 are rejected. Claims 40-41, 49-50, 59-60, 69-70, and 79-80 are objected.

9. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

10. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure.

**Kobayakawa et al. (US No. 5,557,744)** disclose a multiprocessor system including a transfer queue and an interrupt processing unit for controlling data transfer between a plurality of processors.

**Casper et al. (US No. 5,548,791)** disclose an input/output control system with plural channel paths to I/O devices.

**Brayton et al. (US No. 5,623,628)** disclose a computer system and method for maintaining memory consistency in a pipelined, non-blocking caching bus request queue.

**Hassler et al. (US No. 5,450,564)** disclose a method and apparatus for cache memory access with separate fetch and store queues.

**Childers et al. (US No. 5,625,778)** disclose a method and apparatus for presenting an access request from a computer system bus to a system resource with reduced latency.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Raymond Phan, whose telephone number is (703) 306-2756. The examiner can normally be reached on Monday-Thursday from 6:30AM-4:00PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Harvey, can be reached on (703) 305-9705. The fax phone number for this Group is (703) 308-5358.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

*RP*  
**Raymond Phan**  
**June 18, 1997**

*Ayaz R. Sheikh*  
**AYAZ R. SHEIKH**  
**PRIMARY EXAMINER**  
**GROUP 2300**